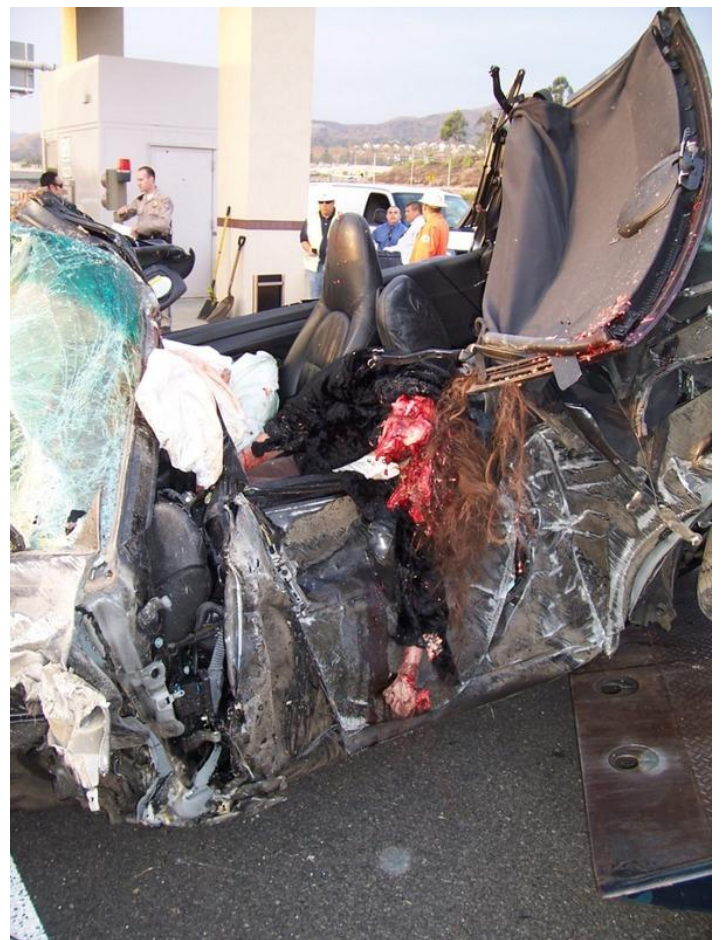




COLLISION INVESTIGATION

Lesson Plan Instructor Guide



ADDITIONAL INSTRUCTOR NOTES

COURSE TITLE: Collision Investigation

INSTRUCTIONAL GOALS: To give the student an awareness and the necessary skills to conduct a traffic accident investigation at the scene, with emphasis on evidence gathering techniques and the importance of physical evidence in accident reconstruction and litigation.

INSTRUCTIONAL OBJECTIVES:

Upon completion of this block of instruction the participant will be able to:

1. Measure, diagram, photograph, and document physical evidence and other data from the accident scene;
2. Interview drivers and witnesses and record their statements for later use;
3. Measure and record the positions of vehicles and other objects at the scene and account for their movements during the accident sequence;
4. Recognize the importance of using evidence and facts to determine how the accident occurred.

INSTRUCTIONAL METHODS: Class lecture with class participation, practical Application of learned techniques of measuring and collecting evidence, handout materials, power point

Homework may be assigned.

HANDOUTS: Student Guide; New Mexico Uniform Accident Report Form and Manual

COURSE DURATION: 23 hours

CURRICULUM REFERENCES: Baker, J. Standard, Fricke, Lynn, (current). The Traffic Accident Investigation Manual. Evanston: Northwestern University Traffic Institute.

Rivers, R.W., (current). Traffic Accident Investigation, A Training and Reference Manual. Jacksonville: Institute of Police Technology and Management.

State of New Mexico Criminal and Traffic Law Manual, (current).

SAFETY CONSIDERATION: NONE

EQUIPMENT, PERSONNEL, AND SUPPLIES NEEDED: Computer with audio/visual capabilities; measuring devices; calculator; adjunct instructor (dependent on size of class)

TARGET AUDIENCE: New Mexico Law Enforcement Entry Level Cadets

COURSE PREREQUISITES: None

INSTRUCTOR CERT.: Professional Lecturer; Specialized Law Enforcement Instructor

INSTRUCTOR RATIO: 1 / 20

EVALUATION STRATEGY: Basic Police Officer Certification Exam

AUTHOR & ORIGATION DATE:

REVISION / REVIEW DATE(S):

REVISED / REVIEWED BY:

COURSE OUTLINE: N.M.L.E.A. BASIC POLICE OFFICER AT-SCENE COLLISION INVESTIGATIONS

I. COURSE GOAL AND OBJECTIVES

II. DESCRIPTIONS / DEFINITIONS

- A. INTRODUCTION TO TRAFFIC ACCIDENT INVESTIGATION
- B. CLASSIFICATIONS OF TRAFFIC COLLISIONS
- C. PRESERVATION OF EVIDENCE
- D. PHYSICAL EVIDENCE FROM THE VEHICLE
- E. PHYSICAL EVIDENCE FROM THE TRAFFICWAY
- F. INTERVIEWING DRIVERS AND WITNESSES
- G. MEASURING AND DIAGRAMING ACCIDENT SCENES

- H. USE OF TRAFFIC TEMPLATE
- I. DIAGRAMS (Project and Field Work)
- J. TESTING AND REVIEW
- III. INTRODUCTION TO TRAFFIC COLLISION INVESTIGATIONS
 - A. Purpose of Accident Investigation
 - B. Definition of an Accident
 - C. Investigators Equipment
 - D. Investigators Duties at a Collision Scene
- IV. EVENTS OF A TRAFFIC ACCIDENT
- V. CLASSIFICATION OF MOTOR VEHICLE TRAFFIC ACCIDENTS
 - A. DEFINITIONS AND INTERPRETATIONS
 - 1. Traffic way
 - 2. Roadway
 - 3. Road
 - 4. Shoulder
 - 5. Motor Vehicle
 - 6. Pedestrian Conveyance
 - 7. Other Road Vehicle
 - 8. Railway Train
 - 9. Motorcycle
 - 10. Pedal-cycle
 - 11. Pedestrian
 - 12. Driver

-
- VI. MOTOR VEHICLE TRAFFIC ACCIDENT DEFINITIONS AND INTERPRETATIONS
- A. In Transport
 - B. Transport Accident
 - C. Motor Vehicle Accident
 - D. Other Road Vehicle Accident
 - E. Motor Vehicle Traffic way Accident
- VII. EXAMPLES OF DEFINITIONS AND INTERPRETATIONS
- A. Vehicle
 - B. Non-Collision Motor Vehicle in Transport Accident. In Motion.
 - C. Non-Collision Motor Vehicle in Transport. Not in Motion.
 - D. Excluded Accidents
- VIII. PRESERVATION OF PHYSICAL EVIDENCE
- A. PHYSICAL EVIDENCE - THAT WHICH IS ADMISSIBLE, TANGIBLE, AND DEMONSTRATABLE THROUGH EXHIBITION, PRESERVATION, RECORDING, MEASURING AND PHOTOGRAPHING
- IX. ARRIVAL AT THE SCENE
- X. MAKE A GENERAL INSPECTION OF THE SCENE
- A. Appraise the situation and decide on priorities of evidence gathering.
 - B. Analyze what is needed.
- XI. THE FOLLOWING EXAMPLES GIVEN FOR EVIDENCE GATHERING AND PRESERVATION ARE OF A GENERAL NATURE. AS STATED BEFORE, EACH ACCIDENT SITUATION SHOULD BE VIEWED AND ANALYZED INDIVIDUALLY AND TREATED AS NECESSARY TO COMPLETE THE INVESTIGATION. MANY AREAS WILL BE COVERED IN GREATER DETAIL IN LATER BLOCKS OF INSTRUCTION

- A. The Driver of the Vehicle:
- B. Weather Conditions.
- C. Vehicle Inspection - Depending on the conditions of the accident sequences, many items should be checked and documented as evidence.
- D. Evidence related to the traffic way.

XII. METHODS OF PRESERVING AND RECORDING EVIDENCE

- A. Written Report.
- B. Diagrams and Maps.
- C. Photography.
- D. REMEMBER, YOUR REPORT, NOTES, PHOTOGRAPHS, ITEMS RECOVERED FROM THE SCENE, AND YOUR PERSONAL OBSERVATIONS ARE ALL PART OF THE EVIDENCE OF THE ACCIDENT AND SHOULD BE PROTECTED AS SUCH.

XIII. PHYSICAL EVIDENCE FROM THE VEHICLE

- A. MOST PRE-CONDITIONS ARE NOT CONTRIBUTING FACTORS IN AUTO COLLISIONS, HOWEVER, SOMETIMES A PRE-EXISTING CONDITION CAN BE A DIRECT CAUSE OR FACTOR

XIV. SOME PRE-CONDITIONS OR DEFECTS IN VEHICLES ARE DIFFICULT TO DISTINGUISH FROM COLLISION DAMAGE OR PRE-COLLISION DAMAGE, OTHERS ARE OBVIOUS.

XV. SIX CLASSIFICATIONS OF VEHICLE DAMAGE CONDITIONS

- A. Preceding but not contributing.
- B. Preceding and contributing.
- C. During collision.
- D. After collision and before final rest.
- E. After collision and final rest on scene.
- F. During removal and storage.

XVI. VEHICLE DEFECTS IN ACCIDENTS

- A. Tires - tires are most often blamed for accidents.
- B. Brakes - Brakes will be factors in an accident, but seldom the direct or only cause.
- C. Suspension and steering.
- D. Wheels - If a wheel breaks or comes off prior to a collision it usually will leave definite marks on the roadway and/or vehicle.
- E. Driver's Vision.

XVII. VEHICLE EXAMINATION - AT COLLISION SCENE

- A. Minor accidents
- B. Severe accidents
- C. On Scene Examination

XVIII. FOLLOW UP EXAMINATION IS USUALLY HANDLED BY AN INVESTIGATOR WHO HAS EXPERTISE IN ADVANCED ACCIDENT INVESTIGATION OR ACCIDENT RECONSTRUCTION. AS AN INVESTIGATOR AT THIS COURSE LEVEL, YOU SHOULD BE FAMILIAR WITH THE BASIC TYPES OF DAMAGES AND THEIR GENERAL MEANINGS

- A. Contact Damage
- B. Induced Damage

XIX. PHYSICAL EVIDENCE FROM VEHICLES

XX. CHECKLIST OF VEHICLE EXAMINATION

XXI. IDENTIFICATION

XXII. DAMAGE EXAMINATION

XXIII. MEASUREMENTS AND DIAGRAMING

XXIV. MEASUREMENTS

- A. Measurements enable you to testify with confidence and precision about your observations of where things were at the accident scene.
- B. Diagrams and Maps.
- C. What Should be Measured?
- D. Temporary Evidence should be Measured First.
- E. Short Lived Evidence should be Measured Second.
- F. The measurements of the roadway should be last, and possibly made at a later date if needed.

XXV. MARKING THE ROADWAY

XXVI. METHODS OF MEASURING

- A. Steel or Fiberglass tape is most accurate.
- B. In recording measurements, do not use the apostrophe (') nor the quote mark (") to indicate feet or inches.
- C. Always use an assistant for measuring if possible
- D. Worthless measurements waste time and serve no purpose.

XXVII. FIELD SKETCH

- A. A set of notes and drawings made at the accident scene showing road configuration, relative positions of vehicles and objects and measurements.
- B. A field sketch should be drawn BEFORE you start measuring.
- C. Do not recopy field sketch, should be original.

XXVIII.REFERENCE POINTS

XXIX. COORDINATE MEASURING

XXX. MEASURING THE ROAD CONFIGURATION

XXXI. DRAWING THE SCALE DIAGRAM

- A. Planning
- B. Drawing

XXXII. PHYSICAL EVIDENCE FROM THE TRAFFIC WAYS

XXXII. MARKS ON THE ROAD ARE EXTREMELY
IMPORTANT TO DETERMINE WHAT HAPPENED IN
AN ACCIDENT

XXXIII.FINAL POSITIONS OF VEHICLES AND BODIES

- A. Uncontrolled
- B. Controlled

XXXIV.TIRE MARKS

- A. Mistakes in dealing with tire marks are the most common and detrimental errors committed in accident investigation.
- B. Tire marks are made in three ways, each leaving a distinct mark and having completely different meanings.
- C. Eight Classifications of Skid Marks.
 - 1. Pavement grinding
 - 2. Tire grinding
 - 3. Erasing
 - 4. Squeegee marks
 - 6. Smear of bituminous material
 - 7. Tire smear
 - 8. Furrow
- D. Tires are designed with thicker tread on outside edges to give uniform distribution of weight at normal inflation and normal vehicle weight.

1. Skid marks of different lengths.
2. Finding the beginning and end of skid marks.
3. Characteristics of skid marks and irregularities.
4. Scuff marks
5. Flat Tire Marks.
6. Tire prints

XXXV.METAL SCARS

- A. MARKS BY METAL ON THE ROAD SURFACE

XXXVI.DEBRIS (MOST COMMON EVIDENCE OF COLLISION)

XXXVII.DAMAGE TO FIXED OBJECTS

XXXVII.SIGNS THAT THE VEHICLE LEFT THE GROUND

XXXVIII.COMBINATIONS OF MARKS

XXXIX. INTERVIEWING DRIVERS AND WITNESSES

XL. IMPORTANT TO QUESTION PEOPLE

- A. Obtaining information from people can often be very complicated.
- B. May be the only way the investigator can find out what happened.

XLI. SETTING THE STAGE

XLII. SUBJECT MATTER FOR OBTAINING INFORMATION

XLII. NARRATIVE ACCIDENT INVESTIGATION

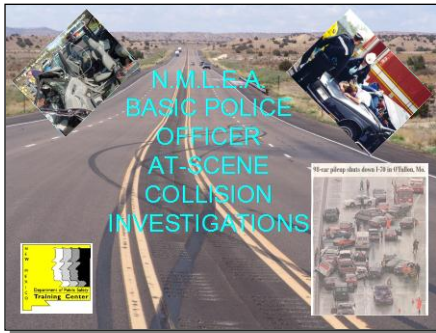
- A. What is a narrative?
- B. Why is the narrative so important?

C. Preparation of the accident narrative.

1. Assignment:
2. Scene.
3. What you observed when you arrived:
 - a. Position of vehicles.
 - b. Position of bodies.
 - c. Position of witness vehicles.
 - d. Position of evidence.
4. Drivers statement.
 - a. Written or oral statement.
 - b. Permanent record of the event.
5. Witness statements.
6. Determining the cause of the accident.
7. Cataloging evidence.
8. Determining faults.
9. Making a permanent record of the event.
10. Testifying in court.
11. Civil litigation.
12. Statistics.
13. Injuries.
14. Evidence.
15. Cause.
16. Articulation of events.
17. Weather conditions.
18. Enforcement.
19. Damage to vehicle.

XLIII. TRAFFIC TEMPLATE

XLIV. STATE OF NEW MEXICO UNIFORM ACCIDENT
REPORT



COURSE CONTENT:

N.M.L.E.A. BASIC POLICE OFFICER AT-SCENE COLLISION INVESTIGATIONS

Instructor Notes:

- Introduce Course
- Introduce Self
- Go over classroom and housekeeping rules
- Distribute Student Manuals

COURSE GOAL AND OBJECTIVES

To give the student an awareness and the necessary skills to conduct a traffic accident investigation at the scene, with emphasis on evidence gathering techniques and the importance of physical evidence in accident reconstruction and litigation. The student will gain the knowledge to properly:

COURSE GOAL AND OBJECTIVES

Instructor Notes: The instructor will cover the course Goal and Objectives and ensure that they are understood and necessary components in conducting an accurate investigation.

1. Measure, diagram, photograph, and document physical evidence and other data from the accident scene;
2. Interview drivers and witnesses and record their statements for later use;
3. Measure and record the positions of vehicles and other objects at the scene and account for their movements during the accident sequence;
4. Recognize the importance of using evidence and facts to determine how the accident occurred.

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Upon completion of this course, the student will have the expertise necessary to conduct an accurate investigation of a traffic collision at the scene.

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INTRODUCTION TO TRAFFIC ACCIDENT INVESTIGATION

- Description: A detailed discussion of the procedures of investigation carried out at the crash scene. The officer's role in the overall picture of traffic law enforcement and the impact proper accident investigation will have on prevention programs and the safe orderly flow of vehicles on our transportation system.

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CLASSIFICATIONS OF TRAFFIC COLLISIONS

- Description: Uniform definitions of motor vehicle traffic accidents will be discussed to provide a common language for police officers, classifiers, analysts, and users of traffic accident data. Also, the uniform traffic accident report form will be discussed in detail.

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PHYSICAL EVIDENCE FROM THE VEHICLE

- Description: Emphasis on priorities on data collection at the accident scene. Vehicle damage that can assist in determining cause will be discussed. Matching vehicle damage to marks on the road will be given a high precedence along with contact and induced damage for more reliable judgement on how the accident happened.

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- Description: Emphasizes the different techniques used to solicit information from individuals involved in accidents to find out why and how the accident happened

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MEASURING AND DIAGRAMING ACCIDENT SCENES

- Description: This unit develops and polishes the skills needed for accurate measurements and recording pertinent information at an accident scene. Different configurations of roadways and intersections will be used so the student can accomplish diagrams with confidence and accuracy.

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USE OF TRAFFIC TEMPLATE

- Description: The many and varied uses of the traffic template will be discussed in great detail. This will provide the confidence necessary for the student to use the template at the accident scene and accomplish reasonably accurate diagrams.

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DIAGRAMS (Project and Field Work)

- Description: Using the knowledge gained in the preceding unit of instruction, the student, using project data, will diagram accident locations and physical evidence. These finished projects will be handed in for review and critiqued by the instructor.

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TESTING AND REVIEW

- Description: A review will be conducted with the students prior to the final exam.

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INTRODUCTION TO TRAFFIC COLLISION INVESTIGATIONS

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Instructor Notes: Here the instructor will solicit questions regarding the descriptions given and clarify for the participant

A. Purpose of Accident Investigation

1. Highway Engineers
 - a) Improve existing roads
 - b) Develop information for future traffic ways
2. Doctors and other emergency personnel
 - a) Assist in diagnosis

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- 3. Insurance company
 - a) Aid in settlement of claims
 - b) Determines insurance rates
- 4. Legislators
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B. Definition of an Accident

- 1. The National Safety Council definition of an accident; **"an accident is an unintended event that produces injury or damage"**
 - a) It must be an unintentional act
 - b) Must have damage, injury or death
- 2. For the purposes of this course, accident is synonymous with traffic collision

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C. Investigators Equipment

- 1. Note pad
- 2. Tape measure/Roll-A-Tape
- 3. Accident forms
- 4. Property inventory forms
- 5. Traffic template
- 6. First aid kit
- 7. Flares
- 8. Flashlight
- 9. Carpenters crayon or spray paint

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D. Investigators Duties at an Collision Scene

- 1. Arrive safely to the scene (his/her own safety primary responsibility)
- 2. Check and treat injuries
- 3. Reduce the risk of fire or other hazards
- 4. Crowd control
 - a) Prevent theft
 - b) Prevent other accidents
 - c) News media (can't control)

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5. Traffic control

- a) Do not use your patrol unit to protect the scene
- **Exception**** A body in the roadway
- b) Set out flares
- c) Avoid diverting traffic into oncoming traffic
- d) Use conventional gestures when directing traffic

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- b) Obtain evidence
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 - 2) Evidence from roadway
 - 3) Statements (driver, witness, etc.)
 - 4) Sketch of scene
- 7. Restore normal traffic flow

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- 1) Damage to vehicles
- 2) Evidence from roadway
- 3) Statements (driver, witness, etc.)
- 4) Sketch of scene

7. Restore normal traffic flow

**EVENTS OF A TRAFFIC
ACCIDENT**

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ACCIDENT**

A. There is two sets of events for every accident: They are:

1. Pre-scene events
2. On scene events

B. Pre-Scene Events

1. Point of possible perception
 - a) The place and time at which the hazard could have been perceived by a normal person.
 - b) There is a point of possible perception at all accident scenes.

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2. Point of Perception

- a) General process of detecting some object or situation and comprehending its significance.
- b) There may be a short or long period of time between point of possible perception and point of perception.
- c) There is no loss of speed to this point.

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3.Evasive Tactics

- a) A driver's choices of evasive tactics are generally limited to six:

- | | |
|----------------|---------------|
| 1) Decelerate | 4) Steer Left |
| 2) Accelerate | 5) Back Up |
| 3) Steer Right | 6) Do Nothing |

- b) The most common choice is deceleration.

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- c) The reaction time for most people is about 0.7 seconds to react and 0.2 seconds of muscular reaction time.

4.Point of No Escape

- a) The point at which it is inevitable that there will be a collision.

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C. On Scene Events

1. First Contact
 - a) The point on a vehicle, pedestrian or other object first touched in a collision.
2. First Harmful Event
 - a) The first occurrence of injury or damage.
 - b) It explains where the accident occurred on or off the roadway.
 - c) Also explains classification of accident; i.e., overturn, other vehicle, non-collision, etc.

C. On Scene Events

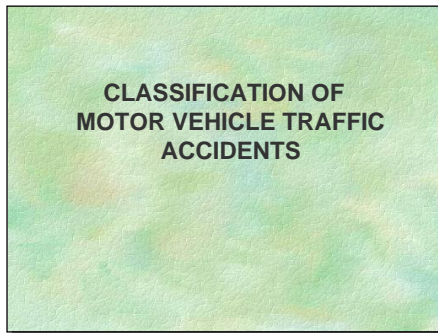
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3. Maximum Engagement
 - a) The greatest penetration of one body by another during a collision.
4. Last Contact
 - a) The final touching of objects in a collision before separation.
5. Stabilized Accident Situation
 - a) The events of an accident have ceased and no further harm will happen unless a new series of events are initiated.
 - b) This is used to determine if it is a chain reaction accident or separate accidents.

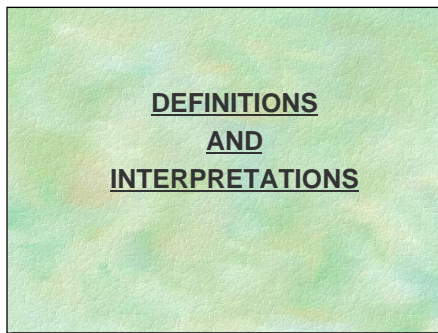
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6. Final Position
 - a) Uncontrolled - the traffic unit comes to rest without additional power.
 - b) Controlled - the traffic is moved to its final position with additional power.

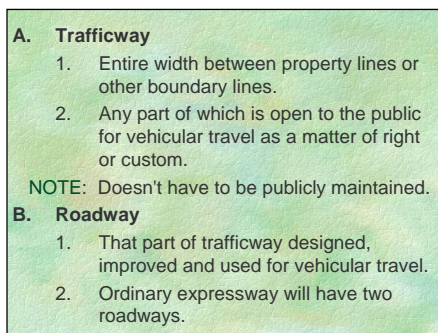
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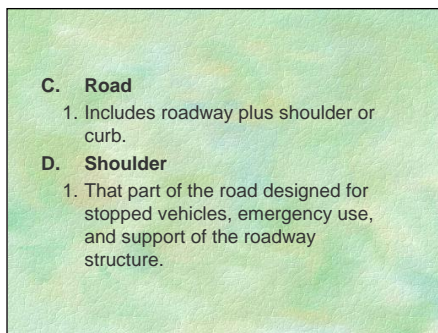
CLASSIFICATION OF MOTOR VEHICLE TRAFFIC ACCIDENTS



DEFINITIONS AND INTERPRETATIONS



- A. Traffic way**
1. Entire width between property lines or other boundary lines.
 2. Any part of which is open to the public for vehicular travel as a matter of right or custom.
- NOTE:** Doesn't have to be publicly maintained.
- B. Roadway**
1. That part of traffic way designed, improved and used for vehicular travel.
 2. Ordinary expressway will have two roadways.



- C. Road**
1. Includes roadway plus shoulder or curb.
- D. Shoulder**
1. That part of the road designed for stopped vehicles, emergency use, and support of the roadway structure.

E. Motor Vehicle

1. Mechanically or electrically powered device.
2. Not operated upon rails.
3. Where any person or property may be transported on a trafficway.
4. Any trailer, sled, etc., towed by a motor vehicle; any device set in motion by a motor vehicle such as pushing; are considered part of the motor vehicle.
5. Also occupants or load set in motion.

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5. Also occupants or load set in motion.

6. MV - Motorcycle, bus, motorized wheel chair, etc.
7. Non-MV - Snow plow plowing snow, road grader grading.

F. Pedestrian Conveyance

1. Any human powered device other than one moved by peddling.
 - a) Coaster wagon, scooter, roller skater, sled, wheel chair
 - b) Excludes bicycle (pedal-cycle)

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G. Other Road Vehicle

1. Any device other than motor vehicle or pedestrian conveyance by which person or property may be transported on a trafficway.
 - a) Animal drawn vehicle
 - b) Animal carrying a person
 - c) Street car
 - d) Bicycle (pedal-cycle)

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 - b) Animal carrying a person
 - c) Street car
 - d) Bicycle (pedal-cycle)

H. Railway Train

1. Same as motor vehicle except operated on rails.
 - a) With or without cars coupled thereto

I. MOTORCYCLE

1. Two wheeled motor vehicle with one or more riding saddles.
 - a) May have third wheel for sidecar, which is part of motorcycle
2. Includes motorized bicycle, scooter or tricycle.

H. Railway Train

1. Same as motor vehicle except operated on rails.
 - a) With or without cars coupled thereto

I. MOTORCYCLE

1. Two wheeled motor vehicle with one or more riding saddles.
 - a) May have third wheel for sidecar, which is part of motorcycle
2. Includes motorized bicycle, scooter or tricycle.

ADDITIONAL INSTRUCTOR NOTES

J. Pedal-cycle

1. A vehicle operated solely by pedals and human power.
 - a) Any size wheel
 - b) Includes tricycle and unicycle

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K. Pedestrian

1. Any person not in or upon a motor vehicle or other road vehicle.
2. Includes persons afoot, sitting, lying or working in trafficway.
3. Also, a person in or operating a pedestrian conveyance.
4. Excludes a person boarding, alighting, jumping or falling from a motor vehicle in transport.

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L. Driver

1. Operator of any motor or other road vehicle.

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**MOTOR VEHICLE TRAFFIC ACCIDENT
DEFINITIONS AND
INTERPRETATIONS**

**MOTOR VEHICLE TRAFFIC ACCIDENT DEFINITIONS AND
INTERPRETATIONS**

A. In Transport

1. The state or condition of a vehicle in use primarily for moving persons or property from one place to another.
 - a) It must be: In motion
 - b) In readiness for motion
 - c) On a roadway, not parked in a designated parking area

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[illegible]

B. Accident

1. An unintended event that produces injury or damage.
 - a) Injury includes fatal injury

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 - a. Injury includes fatal injury

C. Transport Accident

1. Any accident involving a device used at the time for conveying persons or goods.
2. In classifying accidents involving more than one kind of transport device, the following order of procedure should be used:

C.

Transport Accident

time for
one
of

1. Any accident involving a device used at the conveying persons or goods.
2. In classifying accidents involving more than kind of transport device, the following order procedure should be used:

- a) Aircraft
- b) Watercraft
- c) Motor Vehicle
- d) Railway Train
- e) Other road vehicle

3. This means an accident involving a motor vehicle and aircraft will be an aircraft accident, not motor vehicle.

- a) Aircraft
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D. Motor Vehicle Accident

1. An accident involving a motor vehicle.
 - a) No aircraft or watercraft

E. Other Road Vehicle Accident

1. An accident involving another road vehicle.
 - a) No aircraft, watercraft, motor vehicle or railway train

D.

Motor Vehicle Accident

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Other Road Vehicle Accident

1. An accident involving another road vehicle.
 - a) No aircraft, watercraft, motor vehicle or railway train

ADDITIONAL INSTRUCTOR NOTES

F. Motor Vehicle Trafficway Accident

1. Any motor vehicle accident on a trafficway.
 - a) Or after the motor vehicle leaves the roadway but before events are stabilized
 - b) Some rules apply to other road vehicle traffic accidents

G. Non Traffic Accidents

1. Is an accident involving a motor vehicle or other road vehicle, not on a trafficway.

other

F.

Motor Vehicle Traffic way Accident

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 - a) Or after the motor vehicle leaves the roadway but before events are stabilized
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G. Non Traffic Accidents

1. Is an accident involving a motor vehicle or road vehicle, not on a traffic way

EXAMPLES OF DEFINITIONS AND INTERPRETATIONS

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A. Vehicle

1. The use of the device at the time of the accident is the primary consideration of vehicle status - Road Graders, Lawn Mowers, etc.
 - a) Registered motor vehicle drawn by horses = other road vehicle
 - b) Registered motor vehicle breaking ground on a farm = farm machine

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Vehicle

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1. The use of the device at the time of the accident is the primary consideration of vehicle status - Graders, Lawn Mowers, etc.
 - a) Registered motor vehicle drawn by horses = other road vehicle
 - b) Registered motor vehicle breaking ground on a farm = farm machine

- c) A gravel dump truck spreading gravel = a road construction machine
- d) An army truck being driven to a firing range from a motor vehicle pool = motor vehicle
- e) A riding lawn mower on a city street being driven from one home to another = motor vehicle

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ADDITIONAL INSTRUCTOR NOTES

B. Non-Collision Motor Vehicle in Transport Accident. In Motion.

1. Breakage of any part of the motor vehicle resulting in injury or further property damage.
2. Explosion of any part of motor vehicle.
3. Accidental poisoning from carbon monoxide generated by a motor vehicle.

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C. Non-Collision Motor Vehicle in Transport. Not in Motion.

1. Vehicle catches on fire.
2. Occupant falls or jumps.
3. Exhaust gasses seep in.

C. Non-Collision Motor Vehicle in Transport. Not in Motion.

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D. Excluded Accidents

1. Cataclysm such as earthquake, cyclone, flood, etc.
2. Damage intentionally inflicted by police making arrest (Legal intervention), Pursuits, spike belts, stop sticks etc. (Refer to Pursuit Policy)
3. Suicide or self inflicted injury.
4. Homicide.
5. Vandalism.
6. Criminal Intentions

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PRESERVATION OF PHYSICAL EVIDENCE

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ADDITIONAL INSTRUCTOR NOTES

PHYSICAL EVIDENCE - THAT WHICH IS ADMISSIBLE, TANGIBLE, AND DEMONSTRATABLE THROUGH EXHIBITION, PRESERVATION, RECORDING, MEASURING AND PHOTOGRAPHING

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- A. Physical evidence (or the lack of it is the most important part in Accident Investigation.
- B. Properly preserved, documented , and interpreted, it will make the difference between positive knowledge and guesses, fact or fantasy, and proof or speculation of the sequences of the accident

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- C. It is the responsibility of the well trained investigator to find, document, and provide any and all available physical evidence and interpret and use this to the best of his/her ability.
 - 1. If it becomes necessary, a specialist or reconstruction expert can be called upon to help evaluate the evidence.
 - 2. Without the proper information (evidence), no expert can reconstruct an accident.

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ARRIVAL AT THE SCENE

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ADDITIONAL INSTRUCTOR NOTES

A. Park the police vehicle in a safe, convenient position.

1. Only use the police vehicle to protect evidence when absolutely necessary

B. Utilize other official vehicles at the scene in the same manner.

A. position.

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evidence

1. Only use the police vehicle to protect when absolutely necessary

B.

Utilize other official vehicles at the scene in the same manner.

MAKE A GENERAL INSPECTION OF THE SCENE

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A. Appraise the situation and decide on priorities of evidence gathering.

1. Short lived evidence.
2. Temporary evidence.
3. Permanent feature of the scene.

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B. Analyze what is needed.

1. No tire marks generally mean brakes were not applied or effective. WHY?
 - a) Defective brakes
 - b) Driver error
 - c) Road condition
 - d) Anti-locking brakes

B.

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not

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 - a) Defective brakes
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-
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ADDITIONAL INSTRUCTOR NOTES

2. From the prior example, it becomes clear that you must THINK about what is available to you and gather the evidence that is appropriate for each investigation.

2.
must
the
investigation.

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THE FOLLOWING EXAMPLES GIVEN FOR EVIDENCE GATHERING AND PRESERVATION ARE OF A GENERAL NATURE. AS STATED BEFORE, EACH ACCIDENT SITUATION SHOULD BE VIEWED AND ANALYZED INDIVIDUALLY AND TREATED AS NECESSARY TO COMPLETE THE INVESTIGATION. MANY AREAS WILL BE COVERED IN GREATER DETAIL IN LATER BLOCKS OF INSTRUCTION

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A. The Driver of the Vehicle:

1. Physical and mental conditions of drivers and pedestrians can be contributing factors in traffic accidents.
 - a) Evidence of the observations you make of the persons should be preserved in writing and documented when possible

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1. Physical and mental conditions of drivers and pedestrians can be contributing factors in traffic accidents.
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2. Alcohol and other drug use.
 - a) Actions of impaired drivers fall into 2 general classes:
- 1) Mechanical abnormalities
 - a. Failure to dim headlights
 - b. Driving at night without lights
 - c. Failure to use turn signals
 - d. Inside light left on while driving
 - e. Excessive use of the horn

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- ## ADDITIONAL INSTRUCTOR NOTES

- 2) Erratic driving
- a. Weaving in or out of traffic lanes
 - b. Driving in the wrong lane
 - c. Driving too fast or slow
 - d. Failure to comply with traffic ordinances, such as stop signs, yield signs, etc.,

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- 3) Traffic accidents
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 - b. A majority of head-on and hit & run accidents involve impaired drivers

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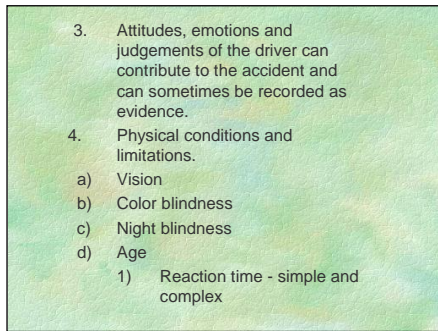
- b) There are volumes in print on detecting and characteristics of impaired drivers. As a review, keep the list below in mind and consider these conditions as Physical Evidence:
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 - b. Unkempt clothing
 - c. Wet trousers or clothing
 - d. Need of support while standing

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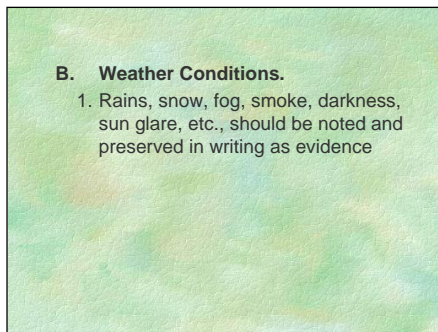
- e. Incoherent or slurred speech
- f. Slow movements
- g. Flushed face
- h. Stumbling or falling
- i. Fumbling for drivers license
- j. Use of profanity
- k. Sleepiness
- l. Talkative or laughing
- m. Excitement
- n. Crying

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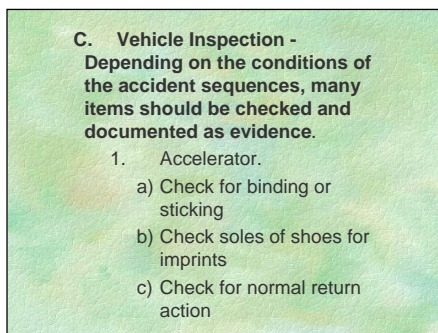
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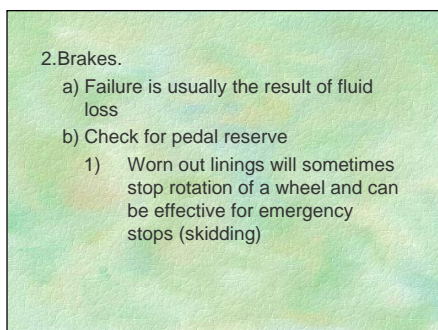
3. Attitudes, emotions and judgments of the driver can contribute to the accident and can sometimes be recorded as evidence.
4. Physical conditions and limitations.
- a) Vision
 - b) Color blindness
 - c) Night blindness
 - d) Age
 - 1) Reaction time - simple and complex



- B. Weather Conditions.**
1. Rains, snow, fog, smoke, darkness, sun glare, etc., should be noted and preserved in writing as evidence



- C. Vehicle Inspection - Depending on the conditions of the accident sequences, many items should be checked and documented as evidence.**
1. Accelerator.
- a) Check for binding or sticking
 - b) Check soles of shoes for imprints
 - c) Check for normal return action



- 2. Brakes.**
- a) Failure is usually the result of fluid loss
 - b) Check for pedal reserve
 - 1) Worn out linings will sometimes stop rotation of a wheel and can be effective for emergency stops (skidding)

ADDITIONAL INSTRUCTOR NOTES

3. Door locks and latches.

- a) May account for ejecting of driver or passenger

4. Gearshift lever.

- a) Note position, may have changed during collision, but can indicate speed or actions prior to collision

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5. Lights.

- a) Many lights (lamps) can be examined to determine if they were "on" or "off" at impact. A lamp switch in the "off" position, should never be turned "on" to determine if the lights were operable.
- b) Non damaged lamps (glass not broken) should be removed at the scene for examination

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- c) Identify and package the lamps as evidence

- d) Broken lamps - use extreme care in handling and storage

- 1) Lamp filaments are very brittle and fragile
- 2) Extreme care must be taken to protect them for later examination

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6. Suspension and steering gear.

- a) Expert should examine broken parts
- b) Check for excessive play in steering gear

7. Speedometer.

- a) Note reading if needle is stuck, but be aware this is USUALLY not good information to base speed estimates

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ADDITIONAL INSTRUCTOR NOTES

8. Tires and wheels.

- a) Note condition of tread
- b) Note inflation
- c) Cuts, abrasions, punctures, etc., should be noted

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- 2) Scuffs
- 3) Striations on tread
- 4) Roll - under of sidewalls

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9. Vehicle glass.

- a) Laminated glass - note contact or induced damage
- b) Safety glass - note pattern of debris

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10. Collision damages.

- a) Contact damage - damage caused by contact with an object that is not part of the vehicle
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collision

ADDITIONAL INSTRUCTOR NOTES

Lined area for additional instructor notes.

D. Evidence related to the trafficway.

1. Skid marks - length, position in roadway, tire on the vehicle (made by tire sliding and not free to rotate).
2. Yaw marks - position on roadway and radius of the mark should be recorded (tire that is rolling & sliding).

D. Evidence related to the traffic way.

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3. Marks on the road.

- a) Identify where possible what part caused the mark
- b) Record position on the roadway and length, width and depth
4. Debris - general location and direction of travel of debris should be noted.

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METHODS OF PRESERVING AND RECORDING EVIDENCE

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A. Written Report.

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B. Diagrams and Maps.

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ADDITIONAL INSTRUCTOR NOTES

C. Photography.

1. "ONE PICTURE IS WORTH A THOUSAND WORDS" (not always true in Accident Investigation).
 - a) Photographs should supplement and reinforce written narrative measurements and diagrams, NOT A SUBSTITUTE

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- D. REMEMBER, YOUR REPORT, NOTES, PHOTOGRAPHS, ITEMS RECOVERED FROM THE SCENE, AND YOUR PERSONAL OBSERVATIONS ARE ALL PART OF THE EVIDENCE OF THE ACCIDENT AND SHOULD BE PROTECTED AS SUCH.**

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PHYSICAL EVIDENCE FROM THE VEHICLE

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ADDITIONAL INSTRUCTOR NOTES

- A. Vehicle defects may be present, but have no relationship to the accident.
1. Slick tires on a stopped vehicle.
 2. Broken headlight in daytime accident.

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- B. If you can show that the accident **WOULD NOT** have occurred if the vehicle had not been defective, the defect can be considered a contributing factor of the accident.
- C. Very often vehicle condition or mechanical defects in combination with driver error are the primary factors of an accident.

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 3. Brake fluid on road prior to collision.

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ADDITIONAL INSTRUCTOR NOTES

B. Statements from drivers.

1. Many times a driver will claim vehicle defect to explain the accident. You should make a complete examination of vehicle if the driver claims the vehicle caused an accident.

C. Look for vehicle defects in accident where road conditions or driver action does not appear to be a factor.

- D. Look for vehicle defects in accidents where the vehicle is in obvious bad condition or needs repair.**

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SIX CLASSIFICATIONS OF VEHICLE DAMAGE CONDITIONS

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A. Preceding but not contributing.

Damage or defect in the vehicle that is present before the accident, but did not contribute to the accident.

B. Preceding and contributing.

Damage or defect in the vehicle that is present before the accident and contributes to the sequence of the accident.

C. During collision.

Damage that occurs during the collision is very important and should be accurately recorded for investigative and reconstruction purposes.

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D. After collision and before final rest.

This type damage can help determine the path of the vehicle after collision, and is useful in determining angles of departure.

1. Care must be taken not to confuse collision damage and post-collision damage

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ADDITIONAL INSTRUCTOR NOTES

E. After collision and final rest on scene.

1. Rescue operations, vandalism, theft, etc.,

F. During removal and storage.

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COMMON VEHICLE DEFECTS IN ACCIDENTS

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A. Tires - tires are most often blamed for accidents.

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- a) Close examination of the tire and wheel assembly can sometimes reveal when the tire actually went flat

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ADDITIONAL INSTRUCTOR NOTES

B. Brakes - Brakes will be factors in an accident, but seldom the direct or only cause.

1. Worn out brakes, (lining worn metal to metal contact) usually will still lock a wheel when applied hard.
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- b) Defective brakes that cause "Pull" can cause the driver to over steer and loose control of the vehicle
- c) Hydraulic failure in late model vehicles will normally effect only two wheels of the system
- d) On early model vehicles, there can be total hydraulic failure with total loss of brakes, except the parking brake

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C. Suspension and steering.

1. Breaking of the suspension or steering components is not common, and usually easily recognized as pre or during collision failure.
2. Loose parts or excessive play in steering system may cause poor control of the vehicle and contribute to the accident.
3. Altered suspension systems, (raising or lowering the vehicle from standard height) adversely effects the stability and handling characteristics of vehicles.

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D. Wheels - If a wheel breaks or comes off prior to a collision it usually will leave definite marks on the roadway and/or vehicle.

E. Driver's Vision.

1. Cracked glass, foreign material over missing glass areas, and lights can be contributing factors in collisions.
2. Windshield wiper condition should not be overlooked in accidents during times when moisture would be present.

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ADDITIONAL INSTRUCTOR NOTES

**VEHICLE EXAMINATION - AT
ACCIDENT SCENE.**

VEHICLE EXAMINATION - AT ACCIDENT SCENE.

- A. Minor accidents - only the information needed to complete the report and investigation is necessary.
- B. Severe accidents - a detailed examination of the vehicles is necessary including descriptions of damage, measurements of damage, and photographs.

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C. On Scene Examination -

- 1. Final position of the vehicles is an important observation to make on scene at a serious accident.
- 2. At times only a general survey of vehicle damage on scene is all that can be accomplished. Further examination can be conducted at the storage area.

- C. On Scene Examination -
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 - 2. At times only a general survey of vehicle damage on scene is all that can be accomplished. Further examination can be conducted at the storage area.

- a) Good photographs on scene are essential. This will prove damage examined later is the same as the actual damage on scene
- b) Note major parts that are detached (wheels, doors, fenders, engine, hood, etc..)
- c) Tires - inflated or deflated, and location on vehicle

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ADDITIONAL INSTRUCTOR NOTES

d) Lamps - list each external lamp on the car and note its condition

- 1) On
- 2) Unbroken and off
- 3) Broken
- 4) Note the position of the headlight switch as on or off. If off, NEVER turn it on to see whether the lights work - you may destroy the only indication in one of the lamps that it was on or off when the collision occurred.

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- 2) Anything that could cause a view obstruction

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- 1) A tire that has been skidded to a stop will have a definite visible area indicating the skid
- 2) A tire that has been in a YAW scuffmark will have striations visible on the surface

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FOLLOW UP EXAMINATION IS USUALLY HANDLED BY AN INVESTIGATOR WHO HAS EXPERTISE IN ADVANCED ACCIDENT INVESTIGATION OR ACCIDENT RECONSTRUCTION. AS AN INVESTIGATOR AT THIS COURSE LEVEL, YOU SHOULD BE FAMILIAR WITH THE BASIC TYPES OF DAMAGES AND THEIR GENERAL MEANINGS

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BASIC TYPES OF DAMAGES AND THEIR GENERAL MEANINGS

ADDITIONAL INSTRUCTOR NOTES

A. Contact Damage - damage to any part of a motor vehicle by direct contact with some object which is not part of the vehicle.

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 - a) Helpful in locating occupants inside vehicle by matching injuries to internal contact damage
 - b) Can be misleading, such as the rear passenger being thrown forward and striking windshield
3. Contact damage on laminated safety glass usually causes fractures radiating and encircling the contact area in a spider web pattern.

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B. Induced Damage - damage to any part of a motor vehicle caused by some other part of the same vehicle or by the shock of collision.

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 - c) Bending
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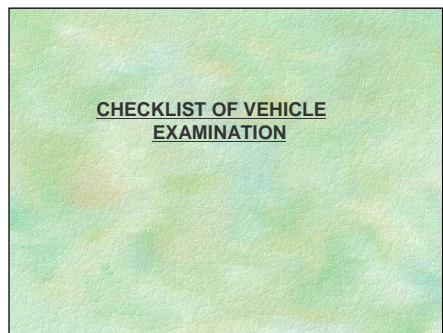
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PHYSICAL EVIDENCE FROM VEHICLES

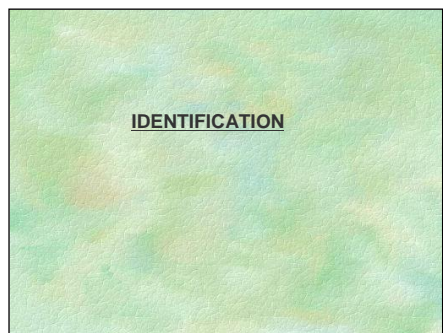
PHYSICAL EVIDENCE FROM VEHICLES

ADDITIONAL INSTRUCTOR NOTES

Lined area for additional instructor notes.



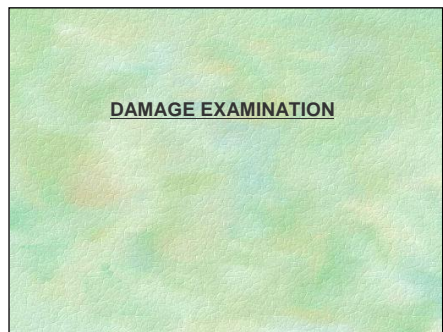
CHECKLIST OF VEHICLE EXAMINATION



IDENTIFICATION

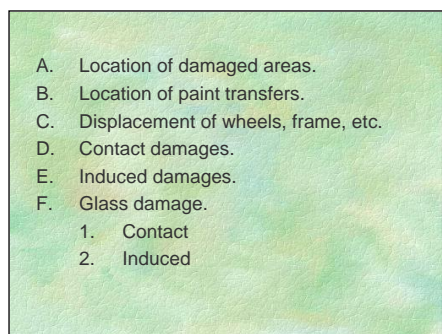


Make
Size
Model
Owner
Vehicle Identification Number
License Plate #

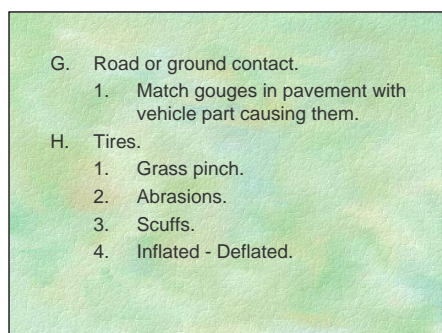


DAMAGE EXAMINATION

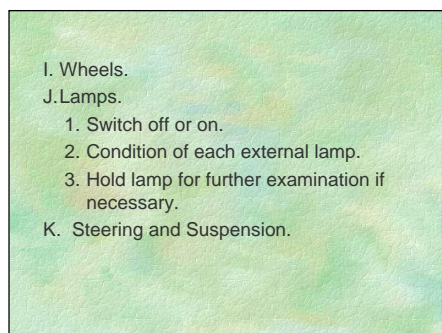
ADDITIONAL INSTRUCTOR NOTES



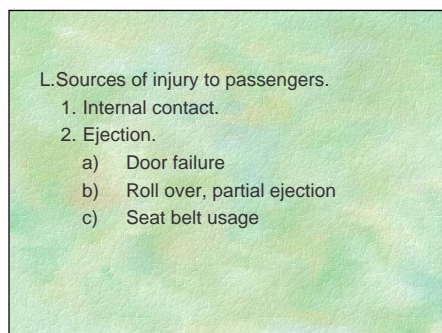
- A. Location of damaged areas.
- B. Location of paint transfers.
- C. Displacement of wheels, frame, etc.
- D. Contact damages.
- E. Induced damages.
- F. Glass damage.
 - 1. Contact
 - 2. Induced



- G. Road or ground contact.
 - 1. Match gouges in pavement with vehicle part causing them.
- H. Tires.
 - 1. Grass pinch.
 - 2. Abrasions.
 - 3. Scuffs.
 - 4. Inflated - Deflated.



- I. Wheels.
- J. Lamps.
 - 1. Switch off or on.
 - 2. Condition of each external lamp.
 - 3. Hold lamp for further examination if necessary.
- K. Steering and Suspension.



- L. Sources of injury to passengers.
 - 1. Internal contact.
 - 2. Ejection.
 - a) Door failure
 - b) Roll over, partial ejection

c) Seat belt usage

ADDITIONAL INSTRUCTOR NOTES

- M. Pedestrian Injuries.
 - 1. Contact with vehicle.
 - 2. Cloth marks or body tissue.
- N. Speedometer.
- O. Brakes.
 - 1. Pedal reserve.
 - 2. Fluid leaks.
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MEASUREMENTS AND DIAGRAMING

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A. Measurements enable you to testify with confidence and precision about your observations of where things were at the accident scene.

- 1. How long were the tire marks?
- 2. How far off the roadway was the car?
- 3. Where in the roadway was the gouge?
- 4. How far back could the driver see the pedestrian?
- 5. What was the radius of the YAW marks left by the accident vehicle?

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B. Diagrams and Maps.

1. Reconstruction of the accident often requires scale diagrams or maps of the accident scene.
 - a) Without the proper measurements at the scene, it is difficult if not impossible to draw scale diagrams
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C. What Should be Measured?

1. Obviously the type of accident and seriousness of the accident dictate what type of measurements are needed.
 - a) In a typical "Fatal Accident", the following should be located by measurements:
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- 5) Gouges and scratches
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- 7) View obstructions that are temporary
- 8) Camera locations for photographs

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D. Temporary Evidence Should be Measured First.

1. Skid mark shadows.
2. Tire prints.
3. Liquid puddles.
4. Debris.
5. Location of dead or injured persons.
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ADDITIONAL INSTRUCTOR NOTES

- E. Short Lived Evidence Should be Measured Second.**
1. Gouges.
 2. Oil or blood stains.
 3. Damage to fixed objects.
- F. The measurements of the roadway should be last, and possibly made at a later date if needed.**

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- A. Sometimes crayon marks and paint marks are necessary for measuring.**
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- B. Outlines of Bodies.**
- C. Marking positions of tires on vehicles**

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- D. Marks for reference points.**
- E. Beginning and ending of tire marks.**
- F. Reference marks for curved tire marks.**
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ADDITIONAL INSTRUCTOR NOTES

METHODS OF MEASURING**METHODS OF MEASURING****A. Steel or Fiberglass tape is most accurate.**

1. Measure to the closest inch or tenth of foot.
 - a) Tapes are available in feet and inches and feet and tenths of feet
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 - b) Difficult to enter into evidence in court
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B. In recording measurements, do not use the apostrophe (') nor the quote mark (") to indicate feet or inches.

1. They can easily be mistaken for the number 1 and 11
2. Fifteen feet 6 inches = 15 ⁶
 Ten feet 0 inches = 10 ⁰
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ADDITIONAL INSTRUCTOR NOTES

C. Always use an assistant for measuring if possible

1. Assistant should hold the "ZERO" end of tape
 - a) Investigators should read the measurements and record them
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FIELD SKETCH

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ADDITIONAL INSTRUCTOR NOTES

A. A set of notes and drawings made at the accident scene showing road configuration, relative positions of vehicles and objects and measurements.

1. Not to scale.
2. Permanent part of an investigation and can be called into court.
3. Use letter size plain white paper or graph paper.

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- a) Your name and any assistance
- b) Case number or identifying numbers
- c) Location
- d) Date and time
4. Draw roadway edges.
 - a) Freehand is sufficient, but be sure drawing is relative to what you see

B. A field sketch should be drawn BEFORE you start measuring.

1. Look at the scene and decide what should be measured.
2. Draw "North" for reference.
3. Identify the sketch.

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5. Add road shoulders, lane lines, centerlines, etc.
6. Label the roads by name and/or number.
7. Draw final positions of vehicles and other evidence.
8. Draw tire marks.
9. Show reference points and reference lines.
10. List items to be measured in column block form and label measurement points; i.e., A, B, C, etc.

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ADDITIONAL INSTRUCTOR NOTES

C. Do not recopy field sketch, should be original.

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REFERENCE POINTS**REFERENCE POINTS****A. Reference points must be based on permanent feature of the traffic way.**

1. Tangible reference points.
 - a) Utility poles
 - b) Fire Hydrants
 - c) Corners of bridges, culverts, buildings
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COORDINATE MEASURING**COORDINATE MEASURING**

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2. Establish a ZERO point.
 - a) Zero point must be based on a tangible or intangible reference point
3. With end of tape at Zero point, stretch tape along the reference line past the points to be measured.
4. Measure in a straight line along the tape to the point to be located, 90 degrees from the REFERENCE line.

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ADDITIONAL INSTRUCTOR NOTES

- a) You must be at a 90-degree angle from the reference line NOT from the point to be located
- 5. Now measure to the point, 90 degrees from the reference line.
 - a) These two measurements have located the point and can be easily redrawn on a scale diagram

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- B. When locating a vehicle, two points must be measured.**
 - 1. Front and rear corner.
 - 2. Front and rear tires to center of wheel.
 - 3. Avoid measurements to the same end, or opposite side of vehicles.
- C. Injured persons or bodies can be measured to the center of the chest.**

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- D. Tire marks.**
 - 1. Skid marks - measure beginning and end, then measure length as a check measurement.
 - 2. YAW marks - points must be established along each mark usually every 10 feet, to establish the ARC.
 - a) By having a series of measured points, you can redraw the marks to scale
 - b) Make a measurement each place the marks cross

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ADDITIONAL INSTRUCTOR NOTES

F. Possible Errors.

1. Can be used on slightly curved roads IF all measurements are 90 degrees from the curve.
 - a) Not suitable for sharp curves
2. You must note in the measurement column a direction for each measurement from the zero point.

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VII. MEASURING THE ROAD CONFIGURATION

A. Width of the traveled roadway.

1. On irregular pavement you may have to establish an average width.
2. A painted roadway edge line is considered the "OFFICIAL" roadway edge.
3. Location and position of "CENTER LINE" painted lines.
 - a) May not actually be in the center of the roadway
4. On curbed roadways, measure from the middle of the face or slope.

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B. Shoulders and parking areas.

C. Median width or barrier width on divided roadways.

D. Intersections.

1. Sight along curb lines or roadway edges and decide which ones actually intersect.
 - a) Most "90 degree" intersections are not actually 90 degrees
2. Offsets - intersections that do not cross at right angles or roads that narrow when crossing another road.

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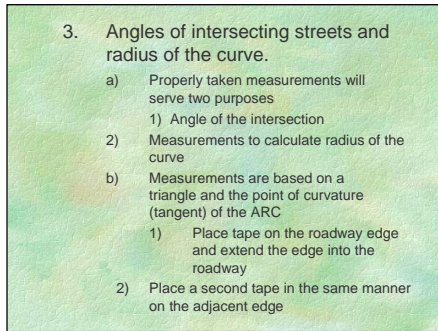
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- 1) Sight along pavement edge
- 2) Measure distance from Zero to Edge
- 3) Draw on scale diagram the same way it was measured

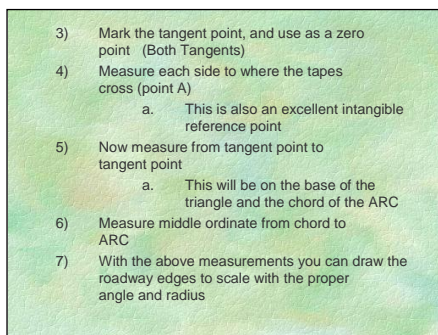
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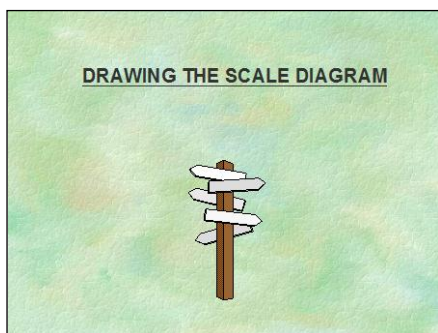
ADDITIONAL INSTRUCTOR NOTES



3. Angles of intersecting streets and radius of the curve.
- a) Properly taken measurements will serve two purposes
 - 1) Angle of the intersection
 - 2) Measurements to calculate radius of the curve
 - b) Measurements are based on a triangle and the point of curvature (tangent) of the ARC
 - 1) Place tape on the roadway edge and extend the edge into the roadway
 - 2) Place a second tape in the same manner on the adjacent edge



- 3) Mark the tangent point, and use as a zero point (Both Tangents)
- 4) Measure each side to where the tapes cross (point A)
 - a. This is also an excellent intangible reference point
- 5) Now measure from tangent point to tangent point
 - a. This will be on the base of the triangle and the chord of the ARC
- 6) Measure middle ordinate from chord to ARC
- 7) With the above measurements you can draw the roadway edges to scale with the proper angle and radius



DRAWING THE SCALE DIAGRAM

ADDITIONAL INSTRUCTOR NOTES

A. Planning

1. How much to include.
2. What scale to use.
3. Size of the diagram.
4. Type of diagram.
 - a) Work diagram
 - b) Display diagram
5. What measurement should be shown in numbers.
 - a) Rarely necessary except heights and depths

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- c) Add vehicles and other evidence
 - 1) Use scale cutouts on traffic template or draw to scale
- d) Label roads, vehicles and signs
- e) Add other items important to the diagram
 - 1) View obstructions, sidewalks, etc.,
- f) Indicate north

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ADDITIONAL INSTRUCTOR NOTES

- g) Identify the city, county, state
- h) Identify kind of diagram
 - 1) Work diagram, collision diagram, after-accident diagram situation, etc.,
- i) Name of person drawing the diagram

- g) Identify the city, county, state
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PHYSICAL EVIDENCE FROM THE
TRAFFIC WAYS

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**MARKS ON THE ROAD ARE
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A. Every motor vehicle accident leaves some physical evidence of what happened.

- 1. Correctly interpreted, they cannot be disputed.
- 2. They usually will not explain all that took place.
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ADDITIONAL INSTRUCTOR NOTES

3. Memory is not sufficient, record all marks by careful measurements and photographs.

B. Six kinds of results may be found on the road.

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2. These results are extremely important to your investigation, so measure, photograph and make notes describing them as soon as possible.

3. Each of the below results will be discussed further.

- a) Final positions of vehicles and bodies
 - 1) Uncontrolled
 - 2) Controlled

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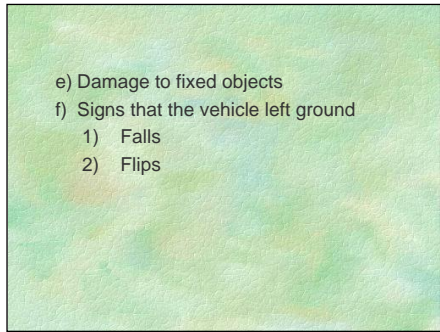
- b) Tire marks
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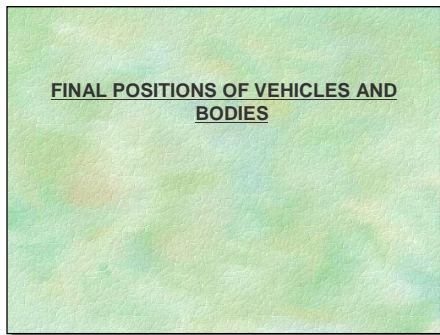
- d) Debris
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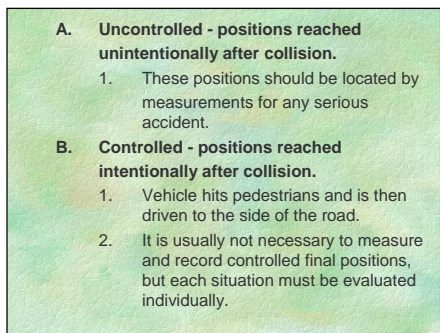
ADDITIONAL INSTRUCTOR NOTES



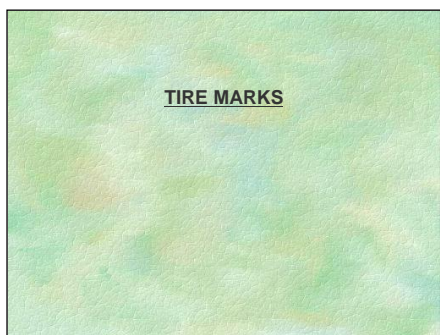
- e) Damage to fixed objects
- f) Signs that the vehicle left ground
 - 1) Falls
 - 2) Flips



FINAL POSITIONS OF VEHICLES AND BODIES



- A. Uncontrolled - positions reached unintentionally after collision.
 - 1. These positions should be located by measurements for any serious accident
- B. Controlled - positions reached intentionally after collision.
 - 1. Vehicle hits pedestrians and is then driven to the side of the road.
 - 2. It is usually not necessary to measure and record controlled final positions, but each situation must be evaluated individually.



TIRE MARKS

ADDITIONAL INSTRUCTOR NOTES

- A. Mistakes in dealing with tire marks are the most common and detrimental errors committed in accident investigation.
- B. Tire marks are made in three ways, each leaving a distinct mark and having completely different meanings.
1. Skid mark - Tire sliding, wheel not rotating.
 2. Scuffmark - Tire sliding, wheel rotating.

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- 3) Brakes were applied hard and locked
- 4) Reduction in speed
- 5) Evidence of minimum speed at beginning of visible skid
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- C. Eight Classifications of Skid Marks.
1. Pavement grinding - collection of material embedded in the tire and treads being ground on the road surface.
 2. Tire grinding - tire is ground by the pavement - small bits of rubber are ground off the tire.
 3. Erasing - clean area on pavement where tire has erased or removed dirt or other materials from pavement.

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ADDITIONAL INSTRUCTOR NOTES

4. Squeegee marks - areas where sliding tire rubs moisture off the surface of the pavement.
5. Smear of soft material - snow, mud, or debris smoothed or spread by sliding tire.
6. Smear of bituminous material - excess tar, asphalt, usually warm, spread by sliding tire.
7. Tire smear - rubber melted from tire rather than material melted from road surface by sliding tire.
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D. Tires are designed with thicker tread on outside edges to give uniform distribution of weight at normal inflation and normal vehicle weight.

1. During a straight-ahead skid, brakes are locked, wheel stops rotating and tire begins to slide. (Non ABS).
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2. Weight shift will occur when the vehicle is braked hard, causing distinguishing characteristics of front and rear skid marks.
 - a) Front tires become over deflected, with most of the weight pressing down on the outside edges and a "LIFTING" effect on the center tread
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- 1) Less weight, less friction, less heat generated, results in lighter marks
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E. Skid marks of different lengths.

1. If brakes are applied hard, all four (4) tires will lock and start to skid about the same time.
2. On vehicles with front disc brakes and rear drum brakes, front may lock up first.
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4. Skid mark shadow is the beginning of the skid mark left by a braking tire just before it stops rotating. Braking is most effective at this time. The mark will be very light and may be only a "CLEANING" of the road surface and will lead directly into the darker skid mark. This shadow mark "MUST" be located and measured as part of the skid mark.

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F. Finding the beginning and end of skid marks.

1. Beginning of the skid will always have some shadow.
 - a) Although shadow is almost always present, you may not be able to see it on all road surfaces i.e.; wet roads.
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3. Sometimes the rear tires will skid directly over the front tire marks. (Overlapped skid marks) with this situation you may be able to find the beginning of the rear wheel skids and not the end, or possibly only be able to see front tire skids and no marks from the rear.
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G. Characteristics of skid marks and irregularities.

1. On a flat level surface a vehicle will slide to a stop in a straight line.
 - a) Turning of the steering wheel will not change the direction of the vehicle during the skid,
2. Most roadways are crowned for water drain-off or have super-elevation. A vehicle skidding on this type of roadway will have more weight on the lower side because of a natural weight shift to the lower side. When the tires are skidding, the weight shift and gravity pull on the low side tend to cause the vehicle to "DRIFT" to the low side causing a curve in the skid mark.

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3. Skidding across two or more surfaces (ASPHALT TO CONCRETE BRIDGE, ETC.)
 - a) If the skid is straight ahead and goes from one surface to another, the only change will be in the rate of deceleration
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ADDITIONAL INSTRUCTOR NOTES

4. Offsets - offsets in skid marks occur when an outside force causes a change in direction of the sliding vehicle.
- a) Shows location of TIRES at point of collision
 - b) Shows direction of force applied that changed the direction of the vehicle

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5. Skip skids - occur when a locked tire bounces on the roadway. The blank spaces are usually shorter than three feet. Bouncing is usually caused by:
- a) Tire striking a hole, bump, rut, or other irregularity in the road surface
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- c) Unloaded or lightly loaded semi-trailer
- d) Unusually stiff suspension in rear of vehicle (Police Vehicles)
- e) Skip skids are measured as though there were no blank spaces because the time the tire is off the pavement is compensated by the force of the tire striking the pavement

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6. Gap skids - occur when locked tires are released and then brakes re-applied by the driver.
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ADDITIONAL INSTRUCTOR NOTES

7. Skids without 4-wheel lock up.
- a) Rear wheels only - if driver does not correct by steering, vehicle will turn around 180 degrees and continue to slide backwards
 - b) Front wheels only - vehicle will slide straight, the same as with 4-wheel lock up, but will take longer to stop
 - c) Two wheels locked on one side - car turns sharply towards locked side
 - 1) Usually will cause sharp spin

- d) One front wheel not locked - vehicle tends to turn as though only rear wheels are locked, but will rotate towards the side of the locked front wheel
 - 1) Some steering input is possible from the rolling tire
 - e) One rear wheel not locked - makes little difference in vehicle behavior. Vehicle will turn slightly toward the side of the locked wheel

8. Scrub marks - a tire mark (skid) resulting from a tire that is locked or jammed by collision and sliding on the roadway.
- a) Scrub mark often helps locate position of vehicle

- H. Scuff marks - indicate vehicle's tires were rotating and sliding. There are YAW scuffmarks, acceleration scuffmarks, and flat tire marks.
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4. YAW marks are made by steering. The vehicle is rotating about a vertical axis as it moves along its path, which means the vehicle is not moving in the direction it was headed.
5. YAW marks as evidence.
 - a) Shows path of vehicle during sideslip
 - b) Shows vehicle speed was too fast to make curve
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6. Characteristics of YAW marks.
 - a) Always curved, because they result from Steering
 - b) Outside tires will leave darker marks because of weight shift
 - c) Radius of the YAW marks will be different over the entire length of the marks
 - d) The length of the marks is NOT useful in speed estimates
 - e) The width of a YAW mark will usually be less than the width of the tire tread
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2. Acceleration scuffs look like skid marks except they start dark and then fade.
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ADDITIONAL INSTRUCTOR NOTES

K. Tire prints - tires that are rolling without sliding leave no friction marks, but they may leave other kinds of marks.

1. Prints on paving - tire rolls through liquid on pavement.
2. Impressions in soft material - snow, slush, sand, etc.
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METAL SCARS - MARKS BY METAL ON THE ROAD SURFACE

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2. Scratches as evidence.

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- b) Path of vehicle after collision
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3. Matching scratches on the road with the parts of the vehicles that made them.

- a) Scratches left by body parts are usually not deep and generally appear as a broad series of roughly parallel striations
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ADDITIONAL INSTRUCTOR NOTES

- c) Hard parts of the vehicle, frame, bolt heads, bumper, etc., will generally leave fine narrow grooves
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- B. Gouges - holes depressions or grooves left when material is dug out of the pavement by strong and hard parts of a vehicle.**
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- c) Look for gouges in all collisions where suspension parts are broken, or if a tire is deflated
- 3. Types of gouges.
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- A. Debris is the accumulation of broken parts of vehicles, rubbish, dirt and other materials left at the accident scene by collisions.
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 - a) The debris before the collision is traveling at the same speed as the vehicle
 - b) When the vehicle decelerates rapidly due to collision, the debris is knocked loose and falls, decelerating at a slower rate than the vehicle
 - c) The debris will first make contact with the ground at some distance from initial contact
2. Debris may be useful in identifying vehicles that have left the scene (Hit and Run).

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3. In some accidents, direction of travel after the collision can be determined from debris.
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ADDITIONAL INSTRUCTOR NOTES

4. Under body debris is mud, dust, rust, paint and road tar knocked loose from the underside of the vehicle.
 - a) Will usually be in a "FAN" pattern from where the debris hit the pavement and continues in the direction the debris was traveling as it hit. THIS MAY NOT BE THE SAME DIRECTION THE VEHICLE WAS TRAVELING

- 1) EXAMPLE: Vehicle traveling North. Hit in right side by vehicle traveling West at a high speed. Debris from northbound vehicle is accelerated west bound and hits pavement west of the north bound vehicle
 - b) When a vehicle is stopped or moving slowly, debris may fall into grooves of the tires and be deposited on the roadway

5. Vehicle parts are debris when broken off and detached from the vehicle.
 - a) Will scatter and tumble
 - b) Distribution of parts may show general path of vehicle after collision
 - c) Not useful in determining point of initial contact

6. Vehicle fluids are debris when splattered or spilled on road by force of collision, or dropped by broken containers.
 - a) Coolant from radiator is most common
 - 1) Since it is under pressure, it may be forcefully propelled onto roadway, giving indication of position of vehicle at collision
 - 2) Must be observed soon after collision for position estimate, because it will begin to run-off immediately

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ADDITIONAL INSTRUCTOR NOTES

- b) Other examples of liquid debris
- 1) Engine oil
 - 2) Gas and diesel fuel
 - 3) Fluid from automatic transmissions
 - 4) Fluid from manual transmissions and differentials
 - 5) Battery acid (will bleach road)
 - 6) Brake fluid

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- c) Spatter is any liquid from vehicle or cargo forcibly thrown on the road
- d) Dribble is a liquid, which drips or drops onto the road
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- e) Run-off is dribble that forms a puddle and flows or trickles to the edge of the road
- 1) Will usually show final rest of vehicle
 - 2) Will show road elevation
7. Solid cargo is considered debris when it is thrown or dropped on the road.
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ADDITIONAL INSTRUCTOR NOTES

DAMAGE TO FIXED OBJECTS**DAMAGE TO FIXED OBJECTS**

- A. May be damage to guard rails, fences, signs, posts, trees, bridges, and other structures on and next to the road surface.
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 - a) May establish positively the final position, even after the vehicle has been moved
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- c) Some fixed objects may show repeated damage, so it is important to examine carefully for new damage
2. Speed estimates from damage to fixed objects are usually inaccurate and not reliable.
 - a) Would have to know the amount of force needed to cause damage, exact size and weight of the object and striking object, etc.,

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SIGNS THAT THE VEHICLE LEFT THE GROUND**SIGNS THAT THE VEHICLE LEFT THE GROUND**

- A. The vehicle is in the air for a short time while falling or flipping. Marks can be located where vehicle left the ground, and especially where the vehicle re-contacts the ground.
- B. Careful measurements are necessary for speed estimates.
- C. Falls - vehicle runs off a bridge or bank and falls through the air.
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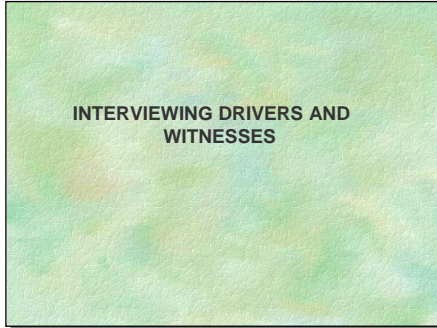
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THERE ARE MANY COMBINATIONS OF ROAD MARKS THAT ARE POSSIBLE, AND IN FACT MOST ACCIDENTS WILL LEAVE COMBINATIONS. THE INVESTIGATOR MUST CORRECTLY LOCATE AND RECORD EACH MARK AND COMBINATION OF MARKS TO COMPLETE AN ACCURATE INVESTIGATION.

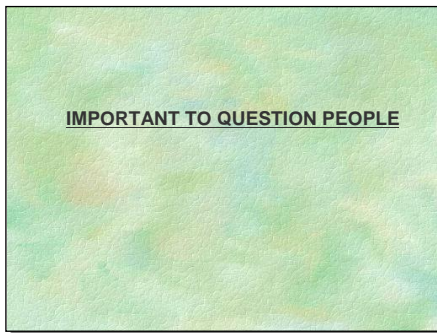
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ADDITIONAL INSTRUCTOR NOTES



INTERVIEWING DRIVERS AND WITNESSES

!



IMPORTANT TO QUESTION PEOPLE

A. Obtaining information from people can often be very complicated.

1. Many people may be involved.
 - a) Difficult to locate them
2. Who can provide us with information.
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 - b) Passenger
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- b) Look for someone who is doing something or is the center of attention
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ADDITIONAL INSTRUCTOR NOTES

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1. Can be used to prove or disprove a conclusion you have drawn or other statements.
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A. Accident scene interviews should be conducted in as quiet and calm an atmosphere as possible.

1. Remove them to a place of safety.
2. Keep the parties separated.
3. Assure them of your desire to do a complete thorough investigation.
4. Keep distractions to a minimum as they talk to you.
5. The level of your investigation also determines the detail you need in questioning people.
6. Identify as many people at the scene as possible for questioning later.

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B. Criminal interviews will be made on occasion at an accident scene.

1. Relocate the person to a place that is not familiar to them.
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ADDITIONAL INSTRUCTOR NOTES

C. Investigator behavior you should be aware of:

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2. Step by step rules to follow are difficult to suggest because of the differences in investigators.
3. Formal approach versus informal approach.
4. Be objective.

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 - 1) A persons race
 - 2) Young or old people
 - 3) Women drivers, etc.

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 - a) Make your first question positive, these usually set the tempo of the session
 - b) Positive questions prevent hedging on the part of the person being questioned
 - c) Ask them in a straightforward manner
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 - a) Make sure he understands your question
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- c) Stay away from general questions
- d) Be PLEASANT but FIRM
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 - a) Your purpose is to find out what they will say, not to convince them they are mistaken

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ADDITIONAL INSTRUCTOR NOTES

- 1) Of course, you need not accept what they say as fact
- 2) Ask about it again later in the interview
 - b) Do not engage in an argument with any person at the scene
 - c) Be aware of the pendulum effect in escalating conflict
 - d) Keep drivers and witnesses apart until after you have interviewed them separately

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 - a) Do not become fixed on specifics, be flexible
 - 1) Allow the person to relate their story with as few interruptions as possible
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10. Be diplomatic and understanding.
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- b) The informant who does not want to talk for a variety of reasons
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ADDITIONAL INSTRUCTOR NOTES

**SUBJECT MATTER FOR OBTAINING
INFORMATION****SUBJECT MATTER FOR OBTAINING INFORMATION****A. Information from people is usually quite fragmentary.**

1. Keep in mind the events of the accident are packed into two or three seconds.
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2. For more serious accidents.
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 3. Who is being questioned and what might he/she be expected to know.
 4. Who is doing the questioning and how much does he/she know or suspect.
 5. The nature of the accident.
 6. Circumstances of questioning.
 7. Identification.
 8. Questions about the trip.
 - a) Time and place began
 - b) Stops if any
 - c) Purpose of trip
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 9. Events of the accident.
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ADDITIONAL INSTRUCTOR NOTES

10. Finally, questions about results of the accident.
- a) Final position
 - b) Persons before and after the accident
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 - e) Lights noticed if after dark
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**NARRATIVE
ACCIDENT INVESTIGATION**

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1. What is a narrative?
- A. A narrative is a record of an event, which contains factual information. To recite the details of a story.
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- A. Assignment:
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ADDITIONAL INSTRUCTOR NOTES

4. Scene.
A. What you observed when you arrived:
1). Position of vehicles.
2). Position of bodies.
3). Position of witness vehicles.
4). Position of evidence.

5. Drivers statement.
A. Written or oral statement.
B. Permanent record of the event.
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A. Oral or written.
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C. Addresses of person and phone numbers.
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A. Determining the cause of the accident.
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G. Statistics.

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A. Position of debris.
B. Point of maximum engagement.
C. Position of bodies.
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E. Photos of scene.

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ADDITIONAL INSTRUCTOR NOTES

11. Enforcement.

- A. Reason.
- B. Citation and statutes violated.

12. Damage to vehicle.

- A. Help to determine extent of the accident.
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TRAFFIC TEMPLATE**TRAFFIC TEMPLATE****A. History of the Traffic Template.**

- 1. Created by J. Stan Baker who was a consultant/instructor for the Northwestern University Traffic Institute, Evanston, Illinois in 1954.
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B. Purposes.

- 1. Used by traffic accident investigators, engineers, architects, claim investigators, and lawyers.
- 2. To speed up preparation of scale traffic accident diagrams.
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- 4. Has a scale to rapidly calculate vehicle speed from skid distance and slide to stop distances.

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ADDITIONAL INSTRUCTOR NOTES

5. Has a scale to allow change from feet per second to miles per hour and to calculate a drag factor.
6. Has linear scales measured at 10 and 20 feet per inch.
7. Has a 90-degree protractor and curve radius.
8. Has scale for measuring road slopes and grades.

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4. Some cutout outlines are too small for common writing pens.
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D. Template Scales.

1. The straight edges of the template have engineering scales.
2. Diagrams can be drawn to where 1 inch = 10 feet or 1 inch = 20 feet.
 - a. Also stated 1:120 or 1:240 which means 1 foot (12 actual inches) = 120 scale feet or 1 foot (12 actual inches) = 240 scale feet.
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ADDITIONAL INSTRUCTOR NOTES

E. Protractor.

1. One end of template is graduated in degrees up to 90 degrees or a right angle.
2. Useful for drawing the angle of a vehicle's position in relation to a centerline or 'base line'.
3. An angle greater than 90 degrees can be measured by simply rotating the protractor from the already drawn 90-degree angle.

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F. Curves, Circles and Arcs.

1. Curves, circles and arcs can be drawn with out a compass.
 - a. Curve is a bend showing the complete roadway.
 - b. Circle is a complete connecting diameter.
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2. Each curve and arc on the template is marked with its radius to match each of the two scales.
3. Holes are provided along the long side of the template in order to draw a greater radius than provided.
 - a. Place a pen/pencil in the 0 hole to draw radiuses of 40 - 100 feet. Placed in the 5 hole, radiuses of 35 - 95 feet can be drawn.

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4. These are doubled on a scale of 1 inch = 20 feet.
5. If a more exact radius is required, then a compass will have to be used.
6. Bump the template edge up to the two lines to be connected and allow for pencil width before completing the arc.
7. When drawing arcs less than 90 degrees to connect two intersecting lines, the center of the arc must be located.

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ADDITIONAL INSTRUCTOR NOTES

- a. Draw two light construction lines the same width's distance from the main two lines running parallel on the inside of the main lines until they connect.
- b. The width's distance between the main lines and the construction lines should be equal to the radius of the curve to be drawn.
- c. The center of the arc is where the construction lines intersect.
- d. From the center of the arc draw a line perpendicular at 90 degrees to the main lines. This is the position where the arc starts.

- e. Place the center of the template arc (hole provided) at the center of the drawn arc then draw as much of the arc as possible from the nearest main line.
- f. To complete the arc, place a pen/pencil in the center hole for the template arc and while holding that center position, rotate the template around the drawn arc's center to where the arc is complete.

- g. This method has to be done since the template provides an arc of up to 90 degrees, not enough for an acute angle.
8. Plastic bridges interrupt some of the larger template curves. To complete these curves, simply place a pen/pencil in the hole at the center of the curve and rotate the template to where the curve can be completed.
9. Usually the radius for a diagram does not have to be to scale so the arc, which looks correct, should be used.

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ADDITIONAL INSTRUCTOR NOTES

10. If the diagram of the curve has to be to scale and none of the arcs on the template fits, then a Chord or C measurement must be measured at the scene.
11. To find a Chord measurement.
 - a. First measure a straight line across a portion of the curve. This is the Chord measurement.
 - b. From the center of this Chord measure at a 90-degree angle to the center of the arc. This will be the greatest distance between the arc of the curve and the Chord measurement. This distance is the Middle Ordinate.

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- c. With these measurements, the radius of the curve can be found by using the following formula: Radius (R) = Chord (c) squared divided by eight multiplied by the Middle Ordinate (M) plus the Middle Ordinate (M) divided by two.
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- G. Drawing Angles.**
1. Draw a straight line.
 2. Locate a point on the line, which is to be the Apex or point of the angle.
 3. In drawing a 90 degree or right angle locate point 0 on the template on the 1" = 20' (small) scale.
 - a. A line has been drawn on the template from point 0 across the width of the template.
 - b. Place the template line over the drawn line on the paper and then slide the template over until one edge is at the Apex or point of the angle.
 - c. Draw along the edge of the template to complete the right angle.

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1. Draw a straight line.
 2. Locate a point on the line, which is to be the Apex or point of the angle.
 3. In drawing a 90-degree or right angle locate point 0 on the template on the 1" = 20' (small) scale.
 - a. A line has been drawn on the template from point 0 across the width of the template.
 - b. Place the template line over the drawn line on the paper and then slide the template over until one edge is at the apex or point of the angle.

- c. Draw along the edge of the template to complete the right angle.

ADDITIONAL INSTRUCTOR NOTES

4. When the angle is given in degrees which is rare.
 - a. Draw a straight line.
 - b. Locate the Apex or point of the angle.
 - c. Place the center hole of the template arcs over the Apex and the point 0 of the small scale on the line.
 - d. Locate and mark the specified number of degrees found on the template protractor.

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 - b. Locate the Apex or point of the angle.
 - c. Place the center hole of the template arcs over the Apex and the point 0 of the small scale on the line.
 - d. Locate and mark the specified number of degrees found on the template protractor.

- e. Then by using one of the straight edges of the template, line up the Apex and the degree mark and draw a line to both points to get the correct angle.

H. Drawing Vehicles.

1. Openings on the template provide outlines for cars and trucks.
2. At 1 inch = 10 feet scale there are small, medium, and large cars, a tractor and trailer. Wheel cutouts are provided for all vehicles in the large scale.

- e. Then by using one of the straight edges of the template, line up the Apex and the degree mark and draw a line to both points to get the correct angle.

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3. At 1 inch = 20 feet scale there are small, medium, and large cars, a tractor and trailer. Only wheel cutouts are provided for the tractor-trailer in the small scale.
4. The template vehicle cut-outs are usually sufficient for all scale diagrams, but if a more detailed scale is needed, then measurements of the vehicle will have to be taken and a scale vehicle drawn.
5. The front or rear of template cars is not specified so small triangle cutouts are provided. Simply draw the triangle pointing forward at the front end of the diagram car inside the car outline.

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ADDITIONAL INSTRUCTOR NOTES

6. The large car cutout will work for pick-ups and panel type trucks.
7. Drawing tractor-trailers.
 - a. The tractor out line shows the cab and drive wheel positions.
 - b. The difference between the front and rear of the tractor-trailer diagram is clear enough to not need use of the directional triangles.
 - c. To draw a tandem axle on a tractor diagram, slide the template back and draw in a second set of axles. Two notches are provided on the back of the tractors to indicate the width of the frame.

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- d. The two holes between the dual wheels indicate the position of the center of the fifth wheel.
- e. If the tractor has a single axle then use the front hole as the center of the fifth wheel. If there is a tandem axle, then use the rear hole to locate the center of the fifth wheel.
- f. Only the front and rear out lines of the trailer is shown since trailers may vary in length. Therefore the length of the trailer must be measured.

- d. The two holes between the dual wheels indicate the position of the center of the fifth wheel.
- e. If the tractor has a single axle, then use the front hole as the center of the fifth wheel. If there is a tandem axle, then use the rear hole to locate the center of the fifth wheel.
- f. Only the front and rear out lines of the trailer is shown since trailers may vary in length. Therefore, the length of the trailer must be measured.

- g. Holes located behind the front of the trailer outline indicate the location of the fifth wheel pin. When drawing in the front of the trailer place the trailer hole over hole on the tractor axles.
- h. Large trucks and buses can be drawn by using the semi-trailer outlines. Attention should be given to the proper length and wheel positions.

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ADDITIONAL INSTRUCTOR NOTES

8. At times it is important to show wheel positions on vehicles. This shows overlap or offset in collisions or collapse due to damage and also location of the vehicle on skid marks.
9. The template also provides axle lines on the vehicles to assist in lining up wheel locations accurately.
10. To use wheel positions mark the point on the vehicle outline, which shows axle position. Slide the outline until the axle line at the wheel cutout is in line with the wheelbase marks. Draw in the wheels.

11. Notice the rear of the car has a longer overhang beyond the wheelbase than does the front.
12. Collapsed portions of a damaged vehicle may be shown by shading the damaged area or by drawing in the damaged portion free hand. If displacement of one or more wheels is obvious, the part of the wheel extended beyond the vehicle outline may be drawn in.
13. If a vehicle is drawn up side down, then the wheels may be drawn in and an X can be drawn across the vehicle outline to suggest a frame or axles.

14. When a vehicle rolls over and rests on its side, a side view of a vehicle must be drawn.
 - a. This can be done by using the circle cutouts on the template to be used for side views of the wheels.
 - b. Draw the wheels with the proper axle spacing by using the vehicle outline.
 - c. Use half of the vehicle outline with one side a little below the wheel centers to draw the bottom part of body.
 - d. The top must be drawn in by hand depending on the shape of the vehicle. The straight edges and arcs on the template can be used in drawing the top of the side view vehicle.
 - e. Generally the height of the car is equal to the distance between the right and left wheel.

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ADDITIONAL INSTRUCTOR NOTES

I. Skid marks.

1. It is often necessary to show skidmarks on a diagram.
2. The straight edge of the template can be used in drawing one of the skid marks while the slot parallel to it can be used to draw the other with out moving the template unless longer skid marks are required.
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3. Each slot is designed to match each of the two scales.
4. The scale width of the slots to the edge of the template is designed to match the outline of the corresponding cars.
5. There are no skid mark slots for trucks or narrow tread cars.
6. A car can be drawn on top of skid marks by placing the car cutout over the end of the drawn skid marks and drawing the outline of the car.

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- a. Be sure to line the end of the skid marks up to the axle marks on the car cutout.
7. In some cases the wheel positions can be drawn in by using the wheel cutouts.

J. Map Symbols.

1. Different types of lines can be useful in diagramming a traffic accident scene. These can be drawn in by either using a straight edge, arc, or freehand.
2. The template has a cutout for traffic signs. This cutout is oversized to be used for either scale.

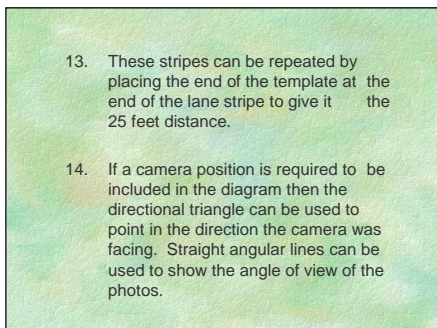
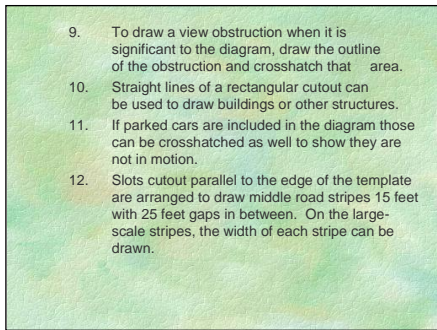
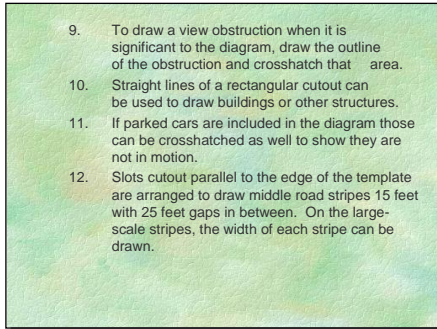
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2. The template has a cutout for traffic signs. This cutout is oversized to be used for either scale.
3. Print the words of the sign parallel to the diagram sign unless it becomes too crowded, otherwise print the words on the sign in a box near the diagram sign with an arrow pointing to the position of the sign.
4. In diagramming traffic signals draw a small circle (freehand, since the holes in the template are usually too big for this purpose) in the location of

3. Print the words of the sign parallel to the diagram sign unless it becomes too crowded, otherwise print the words on the sign in a box near the diagram sign with an arrow pointing to the position of the sign.

4. In diagramming traffic signals draw a small circle (freehand, since the holes in the template are usually too big for this purpose) in the location of the actual signal on the diagram. By using the directional triangles, show the direction of each signal face. It is usually better to use the small car triangle.

ADDITIONAL INSTRUCTOR NOTES



5. To draw a view obstruction when it is significant to the diagram, draw the outline of the obstruction and crosshatch that area.
6. Straight lines of a rectangular cutout can be used to draw buildings or other structures.
7. If parked cars are included in the diagram those can be crosshatched as well to show they are not in motion.
8. Slots cutout parallel to the edge of the template are arranged to draw middle road stripes 15 feet with 25 feet gaps in between. On the large-scale stripes, the width of each stripe can be drawn.
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13. These stripes can be repeated by placing the end of the template at the end of the lane stripe to give it the 25 feet distance.
14. If a camera position is required to be included in the diagram then the directional triangle can be used to point in the direction the camera was facing. Straight angular lines can be used to show the angle of view of the photos.

K. Bodies and Cycles.

1. Outlines are provided to draw bodies in a diagram.
2. The middle of the body should be the point measured to.
3. Outlined is a small body for an adult in the 1 inch = 20 feet scale or a child in the 1 inch = 10 feet scale.
4. A standing or walking pedestrian can be drawn by using the small car wheel of the 1 inch = 10 feet scale. A directional triangle can be used for the head to show the direction the pedestrian is facing.

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5. The final position of a motorcycle or bicycle may be drawn by using the cycle cutout.

L. Identification.

1. Identify the area by printing the street names or highway numbers and include milepost numbers if possible.
2. Show the distance to a nearby cross street or a business name located near the accident or city or county boundaries.

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3. The space for date, time, location, county, and driver's names are already on the supplement diagram page as is space for page numbers of the reports.
4. Sign your name to the diagram indicating who measured and drew it and include the date it was drawn.
5. If the diagram is drawn to scale, include which scale was used either by number of feet to the inch or a scale ratio such as 1:120. It is always better to include a map scale.
6. Show the geographical direction of north by using the cutout of the large 'N' with the arrow.

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M. Slope Measurement.

1. A clipboard can be used to determine the percentage of road grade or super elevation or road banking.
2. Drill a 5/16 inch hole 3/8 inch from the middle of the left edge. Then draw a line through the center of this hole across the center of the board at a right angle to the right edge.
 - a. Put a pencil through the hole in the clipboard and the pivot hole in the template with the glossy side of the template next to the clipboard.

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 - a. Put a pencil through the hole in the clipboard and the pivot hole in the template with the glossy side of the template next to the clipboard.

- b. Place the right edge of the clipboard on or near the centerline of the roadway parallel to the centerline. Hold the clipboard vertically.
- c. Allow the template to swing freely until it comes to rest against the clipboard.
- d. Grasp the template and clipboard and hold tightly so the template does not move from the location from where it came to rest. Now the clipboard and template can be picked up.
- e. The grade can be determined where the line across the clipboard crosses the scale on the bottom of the template.

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3. To measure super elevation which is the banking of the roadway from edge to edge.
 - a. The procedure is the same except the clipboard is placed at a right angle to the centerline.
4. The grade can be measured if the road is uneven such as being covered with snow, mud, or unpaved.
 - a. Get a helper and note the location on his/her body where your eyes meet facing your helper. Use that location for eye contact when you measure.

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- ## ADDITIONAL INSTRUCTOR NOTES

- b. Then stand 15 to 20 feet apart from each other near or at the center of the road.
- c. Use the same method as before except hold the clipboard at eye level and look down the left edge and line it up to the eye level point on your helper.
- d. Let the template swing freely until it stops, grasp and read the grade.

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N. Calculations.


- 1. Down the center of the template are two scales back to back that allows a change from miles per hour to feet per second or vice-versa. Simply read one scale against the other.
- 2. On the left side of the template is a scale that shows distance in feet up to 1300 feet.
- 3. On the right side of the template is a scale that shows a back to back scale of feet per second per second and a drag factor.

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- 3. On the right side of the template is a scale that shows a back to back scale of feet per second per second and a drag factor.
- 4. If any two of these factors are known, a piece of paper can be lined up across the known factors to get the third factor.
 - a. For example, if the slide to stop distance is known and the miles per hour is known, then a straight edge can be lined up from the distance across the speed. From this the feet per second can be obtained as well as the drag factor by simply following the straight edge across the template.
- 5. On the back inside page of the template manual is a list of drag factors, which are scaled with different types of surfaces, and basic speeds from which a range can be obtained.

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ADDITIONAL INSTRUCTOR NOTES



STATE OF NEW MEXICO UNIFORM ACCIDENT REPORT

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- I. Investigating accidents is one of an officer's primary duties. The UNIFORM ACCIDENT REPORT was designed to help the officer to systematically conduct and report his investigation.

- A. In addition to assisting the officer with conducting and reporting the accident the report is used by other state agencies.

1. State Highway and Transportation Department for engineering improvement planning, other traffic safety planning and selective enforcement.

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1. State Highway and Transportation Department for engineering improvement planning, other traffic safety planning and selective enforcement.

2. Taxation and Revenue Department (Motor Vehicle Division).
3. New Mexico State Police
4. The Courts.
5. Other concerned agencies and insurance companies.

- B. The State of New Mexico receives grant money as a result of meeting national standards on the coding of accidents.

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4. The Courts.

5. Other concerned agencies and insurance companies.

- B. The State of New Mexico receives grant money as a result of meeting national standards on the coding of accidents.

- C. The form is designed to comply with the standards set forth in the "National Safety Council Accident Report" form.

- D. The report must answer basic necessary questions.

1. **WHERE** and **WHEN** the accident occurred.
2. **WHO** was involved.
3. **WHAT** were the drivers intending to do.
4. **WHAT** types of vehicles were involved.
5. **HOW** and **WHY** the accident occurred.

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ADDITIONAL INSTRUCTOR NOTES

- E. Officer's who, in the regular course of their duties, investigates an accident is required to submit within **24 HOURS AFTER COMPLETING SUCH INVESTIGATION**, a written report to the Motor Vehicle Division of the State of New Mexico. 66-7-207C.

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- II. General instructions for completing the "Uniform Accident Report" form.
- A. Use a black ballpoint pen and press firmly. Use block print only.
 - B. If three or more vehicles are involved, use additional "Uniform Accident Report" forms to record the information. Indicate the sheet number on the additional form; fill out the location block and other pertinent information. Sign and sate the additional sheets.
 - C. If necessary, use one form at the scene and transcribe the information later to a new form.
 - D. Measurements should be made at the accident scene.
 - E. When necessary to mark boxes use a "X".
 - F. Only the State of NEW MEXICO Uniform Accident Report form will be accepted by the Motor Vehicle Division. All others will be rejected.

INSTRUCTOR NOTES:

For Specific instructions for completion of the Accident Report Form. Refer to the Uniform Accident Report Instruction Manual

COURSE AUDIT

PRIMARY INSTRUCTOR:

SECONDARY INSTRUCTOR:

SUPPORT STAFF (i.e.: Scenario Managers, Role Players, etc):

DATE(S)/ TIME(S) OF INSTRUCTION:

LOCATION OF INSTRUCTION:

RECOMMENDED CURRICULUM CHANGES: Identify inaccurate information, outdated information, new information to be added to update material, etc. (Use additional pages if necessary)

COURSE AUDIT (Continued)

ADDITIONAL INSTRUCTOR COMMENTS: (If any portion of the course content was not presented, indicate the specific content here)

If course content other than the NMDPS TRD approved Basic or PST academy curriculum is taught, the alternative curriculum must be submitted to the Law Enforcement Academy Deputy Director's office and approved prior to delivery of the alternative instructional materials.

☐

Alternative curriculum was taught.

Accreditation number of alternative curriculum:

SIGNATURE**DATE**

Primary Instructor

Reviewed by Program Coordinator

Reviewed by Bureau Chief

Reviewed by LEA Director or Designee

ADDITIONAL INSTRUCTOR NOTES